



RESEARCH MEMORANDUM

EVALUATION OF GUST AND DRAFT VELOCITIES FROM FLIGHTS OF
P-61C AIRPLANES WITHIN THUNDERSTORMS SEPTEMBER 4, 1947

TO SEPTEMBER 5, 1947 AT CLINTON COUNTY

ARMY AIR FIELD, OHIO

By

Jack Funk

Langley Memorial Aeronautical Laboratory
Langley Field, Va.



**NATIONAL ADVISORY COMMITTEE
FOR AERONAUTICS**

WASHINGTON

APR 5 1948

NACA LIBRARY
LANGLEY MEMORIAL AERONAUTICAL
LABORATORY
Langley Field, Va.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

RESEARCH MEMORANDUM

EVALUATION OF GUST AND DRAFT VELOCITIES FROM FLIGHTS OF
P-61C AIRPLANES WITHIN THUNDERSTORMS SEPTEMBER 4, 1947
TO SEPTEMBER 5, 1947 AT CLINTON COUNTY

ARMY AIR FIELD, OHIO

By Jack Funk

The results obtained from measurements of gust and draft velocities within thunderstorms at Clinton County Army Air Field, Ohio, for the period of September 4, 1947 to September 5, 1947 are presented herein. These data are summarized in tables I and II, respectively, and are of the type presented in reference 1 for previous flights.

Langley Memorial Aeronautical Laboratory
National Advisory Committee for Aeronautics
Langley Field, Va.

Jack Funk

Jack Funk
Aeronautical Engineer

Approved:

John R. Westfall
for

Richard V. Rhode
Chief of Aircraft Loads Division

bkb

REFERENCE

1. Funk, Jack: Evaluation of Gust and Draft Velocities from Flights of P-61C Airplanes within Thunderstorms August 13, 1947 to August 15, 1947 at Clinton County Army Air Field, Ohio. NACA RM No. L8A27, 1948.

TABLE I.- SUMMARY OF GUST MEASUREMENTS FROM FLIGHTS
OF P-61C AIRPLANES WITHIN THUNDERSTORMS

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)	Maximum true gust velocity $U_{t_{max}}$ (fps)	Gust gradient distance (ft)	No. of gusts
September 4, 1947 - Flight 33					
Airplane 356 - Traverse 1 Length of traverse 1213.1 sec					
0 - 80	19,500	----	-----	----	0
^a 80 - 90		----	-----	----	0
90 - 110		----	-----	----	0
110 - 120		----	-5.3	----	2
120 - 130		----	-----	----	0
^b 130 - 140		----	-----	----	0
140 - 150		4.6	-----	----	1
150 - 160		----	-2.9	-4.1	390
160 - 180		----	-----	----	0
180 - 190		3.4	3.9	255	1
190 - 240	19,000	----	-----	----	0
240 - 250		4.2	-----	----	2
250 - 280		----	-----	----	0
^a 280 - 290		3.2	-----	----	1
290 - 300		2.4	-----	----	1
300 - 600		----	-----	----	0
^b 600 - 610		----	-----	----	0
610 - 890		----	-----	----	0
890 - 900		----	-2.8	-5.3	87
900 - 1000	19,000	----	-----	----	0
1000 - 1010	19,500	----	-4.0	-5.3	105
1010 - 1020	19,000	----	-----	----	0
^a 1020 - 1030		----	-----	----	0
1030 - 1060		----	-----	----	0
1060 - 1070		----	-3.3	-6.0	192
1070 - 1090		----	-----	----	0
1090 - 1100		----	-3.4	-6.2	142
1100 - 1110		----	-3.4	-----	1
1110 - 1150		----	-----	----	0
1150 - 1160		2.6	-----	----	1
1160 - 1170		4.1	-6.1	-----	2
1170 - 1180		----	-----	----	0
1180 - 1190		----	-3.2	-----	2

^aCloud entry.
^bCloud exit.

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e\max}$ (fps)	Maximum true gust velocity $U_{t\max}$ (fps)	Gust gradient distance (ft)	No. of gusts
September 4, 1947 - Flight 33					
Airplane 356 - Traverse 1 Length of traverse 1213.1 sec					
1190 - 1210	19,000	----	-----	----	0
1210 - 1220		----	-----	----	0
Airplane 356 - Traverse 2 Length of traverse 358.0 sec					
0 - 10	21,000	9.4	-11.4	----	7
10 - 20		4.6	-3.8	----	3
20 - 30		3.3	-5.7	----	2
30 - 40		----	-3.8	----	1
40 - 300		----	----	----	0
300 - 310		2.5	----	----	1
310 - 360		----	----	----	0
Airplane 348 - Traverse 1 Length of traverse 1190.6 sec					
0 - 20	14,500	----	-----	----	0
20 - 30		6.0	-2.8	----	2
30 - 40		5.3	-4.7	----	3
40 - 50		4.8	-4.6	----	2
50 - 60		6.5	----	4.5	256
60 - 190		----	----	----	0
190 - 200		3.6	----	----	1
200 - 270		----	----	----	0
270 - 280		4.4	-4.0	----	3
280 - 290		5.9	----	----	5
290 - 300		4.2	-5.7	----	6
300 - 310		3.6	----	----	1
310 - 320		7.7	----	----	1
320 - 1200		----	----	----	0
Airplane 348 - Traverse 2 Length of traverse 320.9 sec					
0 - 330	16,500	----	-----	----	0

bCloud exit.



TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)	Maximum true gust velocity $U_{t_{max}}$ (fps)	Gust gradient distance (ft)	No. of gusts
September 5, 1947 - Flight 34					
Airplane 348 - Traverse 1 Length of traverse 948.6 sec					
0 - 10	19,500	----	----	----	0
10 - 20		2.2	-3.8	7.1	2
^a 20 - 30		----	-3.8	----	1
30 - 40		3.8	-6.0	----	3
40 - 50		1.3	-5.4	----	2
50 - 60		----	----	----	0
60 - 70		4.8	-3.8	----	2
70 - 80		1.9	-5.7	----	5
80 - 90		7.9	----	----	4
90 - 100		10.8	-5.1	----	8
100 - 110		13.3	-9.2	----	12
110 - 120	19,000	14.3	-15.9	----	7
120 - 130		9.8	-15.9	----	8
130 - 140	19,500	4.4	-7.9	----	5
140 - 150		2.9	-4.1	----	2
150 - 160		----	-5.4	----	4
160 - 170	19,000	2.9	----	6.9	2
170 - 180		2.2	-5.1	----	2
180 - 190	19,500	2.5	-4.1	----	2
^b 190 - 200		----	-4.1	-8.2	1
200 - 210		2.5	----	----	1
210 - 220		----	-5.1	----	1
220 - 230		----	-5.1	----	1
230 - 240		----	-7.6	----	2
240 - 250		----	-8.6	----	1
250 - 260		8.9	-9.2	----	7
260 - 270	19,000	4.1	-7.6	----	2
270 - 280		2.9	-2.5	----	2
280 - 290		2.5	-4.4	4.6	3
290 - 300		2.5	----	----	2
300 - 330		----	----	----	0
330 - 340		2.9	----	----	1
340 - 950	19,500	----	----	----	0

^aCloud entry.^bCloud exit.

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)	Maximum true gust velocity $U_{t_{max}}$ (fps)	Gust gradient distance (ft)	No. of gusts
September 5, 1947 - Flight 34					
Airplane 348 - Traverse 2 Length of traverse 1239.9 sec					
0 - 10	19,500	2.5	-2.8	----	3
10 - 20		6.0	-12.2	----	4
^a 20 - 30		12.9	-16.0	----	11
30 - 40		11.0	-17.6	----	12
40 - 50		8.5	-----	----	4
50 - 60	19,000	10.0	-3.8	----	8
60 - 70		4.4	-10.7	----	9
70 - 80		7.5	-13.8	----	8
80 - 90		4.4	-8.5	----	5
90 - 100	18,500	24.8	-17.9	----	6
100 - 110	19,000	7.2	-12.2	----	6
110 - 120		27.9	-----	----	1
120 - 130		-----	-6.9	----	2
130 - 140		-----	-----	----	0
140 - 150		4.1	-2.2	----	3
150 - 160		-----	-6.6	----	1
160 - 170		-----	-4.4	----	2
170 - 180		-----	-----	----	0
180 - 190		-----	-3.1	----	1
190 - 270		-----	-----	----	0
270 - 280		-----	-4.1	----	2
280 - 330		-----	-----	----	0
330 - 340		-----	-6.6	----	2
340 - 350		-----	-2.5	----	1
350 - 480		-----	-11.4	----	0
480 - 490		2.8	-8.4	----	8
490 - 500		-----	-----	----	0
500 - 510		3.1	-----	----	1
510 - 520		2.2	-----	----	1
520 - 530		-----	-4.7	----	1
530 - 540		-----	-----	----	0
540 - 550		2.5	4.2	9.2	1
550 - 560		-----	-----	----	0
560 - 570		-----	-5.3	----	1
570 - 580		-----	-2.8	----	1

^aCloud entry.

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)	Maximum true gust velocity $U_{t_{max}}$ (fps)	Gust gradient distance (ft)	No. of gusts
September 5, 1947 - Flight 34					
Airplane 348 - Traverse 2 Length of traverse 1239.9 sec					
580 - 600	19,000	----	----	---	0
600 - 610		2.5	----	---	1
610 - 620		----	----	---	0
620 - 630	19,500	3.1	-4.7	---	5
630 - 640		2.5	-2.8	---	2
640 - 650	19,000	2.5	----	---	1
650 - 660		2.5	-4.1	---	2
660 - 670	19,500	6.9	-4.7	---	6
670 - 680		----	----	---	0
680 - 690	19,000	8.7	-4.1	---	3
690 - 700		7.2	-7.2	---	3
700 - 710		2.5	----	---	1
710 - 720	19,500	----	-5.3	---	1
720 - 730	19,000	3.1	----	---	3
730 - 740		----	-5.3	---	1
740 - 750		7.8	----	14.5	1
750 - 760		5.0	-4.7	-8.1	6
760 - 770		4.7	-4.7	---	3
770 - 780		2.5	----	---	2
780 - 790		----	-4.7	---	2
^b 790 - 800		3.1	-2.8	---	3
800 - 810		3.7	-4.7	---	3
810 - 830		----	----	---	0
830 - 840		4.1	----	---	1
840 - 850		4.7	----	---	1
850 - 860		----	-8.7	---	1
^a 860 - 870		----	----	---	0
870 - 880		----	-4.1	---	1
880 - 960		----	----	---	0
960 - 970		17.7	-9.6	---	8
970 - 980		.9	-13.0	---	11
980 - 990		7.5	-5.3	---	10
990 - 1000	19,500	16.8	-12.4	---	6
1000 - 1010		7.8	-12.1	---	13
1010 - 1020		12.4	-9.3	---	7

^aCloud entry.
^bCloud exit.

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e \max}$ (fps)		Maximum true gust velocity $U_{t \max}$ (fps)		Gust gradient distance (ft)		No. of gusts
September 5, 1947 - Flight 34								
Airplane 348 - Traverse 2 Length of traverse 1239.9 sec								
1020 - 1030	19,500	12.4	-14.3	----	-----	---	---	6
1030 - 1040		7.5	-9.9	----	-----	---	---	5
1040 - 1050	19,000	----	-9.3	----	-----	---	---	2
1050 - 1060		8.1	-6.5	----	-----	---	---	4
1060 - 1070		5.0	-2.8	----	-----	---	---	4
1070 - 1080		5.6	-4.7	----	-8.7	---	267	2
1080 - 1090		5.3	-10.3	----	-9.4	---	69	6
1090 - 1100		----	-----	----	-----	---	---	0
1100 - 1140		----	-----	----	-----	---	---	0
1140 - 1150		5.3	-5.0	----	-----	---	---	2
1150 - 1220		----	-----	----	-----	---	---	0
1220 - 1240	18,500	----	-----	----	-----	---	---	0
Airplane 353 - Traverse 1 Length of traverse 486.1 sec								
0 - 10	15,000	----	-----	----	-----	---	---	0
10 - 20	14,500	----	-----	----	-----	---	---	0
20 - 30		5.4	-----	6.7	-----	126	---	1
30 - 40		4.5	-3.5	----	-----	---	---	3
40 - 100		----	-----	----	-----	---	---	0
100 - 110		----	-2.9	----	-----	---	---	1
110 - 120		11.2	-8.0	----	-----	---	---	4
120 - 130		----	-----	----	-----	---	---	0
130 - 140		----	-----	----	-----	---	---	0
140 - 150		8.0	-3.2	----	-----	---	---	2
150 - 160		3.8	-9.3	----	-14.7	---	141	5
160 - 170		----	-----	----	-----	---	---	0
170 - 180		9.6	-8.0	----	-----	---	---	3
180 - 190		11.2	-14.1	----	-----	---	---	8
190 - 200		17.3	-8.0	----	-----	---	---	8
200 - 220		----	-----	----	-----	---	---	0
220 - 230		2.0	-2.9	7.8	-5.0	217	151	4
230 - 240	15,000	13.8	-----	----	-7.2	---	147	2
240 - 280		----	-----	----	-----	---	---	0

^aCloud entry.^bCloud exit.

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)	Maximum true gust velocity $U_{t_{max}}$ (fps)	Gust gradient distance (ft)	No. of gusts
September 5, 1947 - Flight 34					
Airplane 353 - Traverse 1 Length of traverse 486.1 sec					
280 - 310	14,500	----	----	----	0
310 - 320		15.0	-6.7	----	3
^a 320 - 330		8.3	-8.3	17.1	2
330 - 340		5.4	-6.7	----	2
340 - 350		12.8	-2.9	----	2
350 - 360		12.5	-4.5	-7.2	3
360 - 370	15,000	----	-4.2	----	2
370 - 380		4.8	-4.8	----	3
380 - 390		10.9	-6.7	19.2	3
390 - 400		5.8	-9.3	----	4
400 - 410	15,500	4.2	-5.1	----	2
410 - 420	15,000	5.8	----	----	1
420 - 450		----	----	----	0
450 - 460		9.6	-4.5	----	4
^b 460 - 470		----	----	----	0
470 - 490		----	----	----	0
Airplane 353 - Traverse 2 Length of traverse 107.0 sec					
0 - 10	15,000	8.9	-5.4	----	4
10 - 20		4.8	----	----	1
^a 20 - 30		4.8	-8.9	----	8
30 - 40		5.1	-6.4	----	4
40 - 50		8.9	-4.5	6.8	3
50 - 60		12.4	-6.0	----	2
60 - 70		7.0	-8.6	-8.9	5
70 - 80		9.9	-7.3	----	4
80 - 90		9.2	-5.4	----	7
90 - 100		5.7	-14.3	----	4
^b 100 - 110		7.6	----	----	2

^aCloud entry.^bCloud exit.

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)	Maximum true gust velocity $U_{t_{max}}$ (fps)	Gust gradient distance (ft)	No. of gusts
September 5, 1947 - Flight 34					
Airplane 353 - Traverse 3 Length of traverse 412.8 sec					
0 - 30	14,500	----	-----	----	0
30 - 40	15,000	5.1	-4.4	----	2
40 - 50	14,500	5.7	-4.4	12.0	5
50 - 60		7.3	-1.6	-----	3
^a 60 - 70		10.7	-6.6	-----	4
70 - 80		11.1	-8.2	-----	4
80 - 90		12.3	-----	-----	2
90 - 100		9.8	-5.1	-----	4
100 - 110		5.1	-8.2	-----	2
110 - 120		5.4	-4.1	-----	3
120 - 130		8.2	-5.4	19.1	3
130 - 140		----	-----	-----	0
140 - 150		6.6	-7.9	-----	2
150 - 160		4.4	-4.1	-----	3
160 - 170		-----	-----	-----	0
170 - 180		----	-2.8	-----	1
180 - 190		-----	-----	-----	0
190 - 200		5.1	-----	-----	1
200 - 210		7.3	-3.5	-----	5
210 - 220		5.7	-----	-----	3
220 - 230		4.7	-8.2	----	4
230 - 240		----	-4.7	-----	2
240 - 250		-----	-----	-----	0
250 - 260		7.3	-5.7	-----	4
260 - 270		9.8	-3.5	-----	8
270 - 280		8.8	-7.9	-----	2
280 - 290		----	-6.0	-----	1
290 - 310		-----	-----	-----	0
310 - 320		5.4	-6.0	-----	2
320 - 330		7.6	-9.2	-----	4
330 - 340		----	-13.3	-----	1
340 - 350		4.7	-4.7	-----	3
350 - 360		-----	-8.2	-----	2
360 - 370		10.1	-10.7	-----	4
370 - 380		----	-2.8	----	1

^aCloud entry.

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)	Maximum true gust velocity $U_{t_{max}}$ (fps)	Gust gradient distance (ft)	No. of gusts	
September 5, 1947 - Flight 34						
Airplane 353 - Traverse 3 Length of traverse 412.8 sec						
380 - 390	14,500	----	-3.8	----	1	
^b 390 - 400		----	-7.6	----	1	
400 - 410		----	-----	----	0	
410 - 420		----	-----	----	0	
Airplane 353 - Traverse 4 Length of traverse 1443.0 sec						
0 - 10	13,500	----	-----	----	0	
10 - 20		6.6	-----	----	1	
20 - 30		7.2	-----	----	1	
^a 30 - 40		----	-2.8	----	1	
^b 40 - 50		----	-----	----	0	
50 - 60		2.8	-4.4	----	2	
60 - 70		----	-----	----	0	
^a 70 - 80		9.1	-5.0	17.4	148	6
80 - 90		----	-4.1	----	----	1
90 - 100		----	-----	----	----	0
100 - 110		5.0	-1.9	----	----	3
110 - 120		7.5	-3.4	8.5	74	4
120 - 130		6.9	-5.3	----	----	2
130 - 140		12.5	-6.6	----	----	2
140 - 150		----	-7.5	----	----	2
150 - 160		9.1	-8.8	----	----	3
160 - 170	8.5	-7.5	----	----	6	
170 - 180	9.1	-11.6	18.5	-21.7	313 142	5
180 - 190	5.3	-4.1	----	----	----	4
190 - 200	4.4	-4.1	----	----	----	3
200 - 210	7.8	-4.4	----	----	----	2
210 - 220	8.5	-3.4	9.0	----	141	5
220 - 230	8.1	-4.4	----	----	----	2
230 - 250	14,000	----	-----	----	----	0
250 - 260		----	-7.2	----	----	1
260 - 270	13,500	4.1	-4.4	----	----	2

^aCloud entry.
^bCloud exit.



TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)	Maximum true gust velocity $U_{t_{max}}$ (fps)	Gust gradient distance (ft)	No. of gusts
September 5, 1947 - Flight 34					
Airplane 353 - Traverse 4 Length of traverse 1443.0 sec					
270 - 280	13,500	----	----	----	0
280 - 290	13,000	----	----	----	0
290 - 300		----	-2.8	----	1
300 - 380		----	----	----	0
380 - 390		5.9	-1.9	11.6	286
390 - 400	12,500	----	----	----	0
400 - 410	13,000	4.1	----	----	1
410 - 440	13,500	----	----	----	0
440 - 450		----	-3.4	----	1
450 - 470		----	----	----	0
470 - 480		----	-4.1	-11.4	247
480 - 490		5.3	----	----	1
490 - 500	13,000	----	----	----	0
500 - 510		15.9	----	----	2
510 - 540	13,500	----	----	----	0
540 - 550		4.1	----	----	1
550 - 580		----	----	----	0
580 - 590		11.2	-3.7	----	2
590 - 600		----	-3.7	-4.8	122
600 - 620		----	----	----	0
620 - 630		----	-6.9	----	1
630 - 650		----	----	----	0
650 - 660		4.4	-11.8	-19.8	50
660 - 670		5.6	-4.1	----	3
670 - 680		----	----	----	0
680 - 690		5.9	-4.1	----	3
690 - 740		----	----	----	0
740 - 750	13,000	14.3	----	----	2
750 - 760	13,500	----	----	----	0
760 - 770		7.5	-2.5	10.1	204
770 - 780		----	----	----	0
780 - 790		8.4	-3.1	----	2
790 - 800		----	----	----	0
800 - 810		----	----	----	0
810 - 880		----	----	----	0

b Cloud exit.

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)	Maximum true gust velocity $U_{t_{max}}$ (fps)	Gust gradient distance (ft)	No. of gusts
September 5, 1947 - Flight 34					
Airplane 353 - Traverse 4 Length of traverse 1443.0 sec					
880 - 890	13,500	2.4	-3.7	----	1
890 - 900		----	----	----	0
900 - 910		3.4	----	----	1
910 - 920		----	----	----	0
920 - 930		----	----	----	0
930 - 960		----	----	----	0
960 - 970		8.1	----	----	4
970 - 980		14.6	----	----	1
980 - 990		----	-9.6	----	1
990 - 1000		3.4	-3.1	----	4
1000 - 1020	14,000	----	----	----	0
1020 - 1030		----	-9.3	----	2
1030 - 1040	13,500	8.7	-9.0	----	4
1040 - 1050		----	-4.7	----	1
1050 - 1060	13,500	----	-2.2	----	1
1060 - 1070		8.7	----	----	1
1070 - 1090	13,500	----	----	----	0
1090 - 1100		----	-2.2	----	1
1100 - 1120	13,500	----	----	----	0
1120 - 1130		13.0	----	----	1
1130 - 1140	14,000	6.5	-5.9	----	6
1140 - 1150	13,500	5.3	-9.9	----	6
1150 - 1160		----	-2.8	----	1
1160 - 1170	13,500	4.0	----	----	1
1170 - 1180		9.9	-6.5	----	7
1180 - 1190	13,000	5.6	-3.1	----	6
1190 - 1200		4.0	----	----	2
1200 - 1210	13,500	5.6	----	----	1
1210 - 1220		5.9	-4.3	----	3
1220 - 1230	13,500	----	-4.0	----	1
1230 - 1240		----	----	----	0
1240 - 1250	13,500	4.7	-3.4	----	2
1250 - 1260		4.3	-4.7	----	2
1260 - 1270	13,500	4.0	----	----	1

^aCloud entry.^bCloud exit.

NACA

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)	Maximum true gust velocity $U_{t_{max}}$ (fps)	Gust gradient distance (ft)	No. of gusts		
September 5, 1947 - Flight 34							
Airplane 353 - Traverse 4 Length of traverse 1443.0 sec							
1270 - 1280	13,500	----	-4.7	----	1		
1280 - 1290		----	----	----	0		
1290 - 1300		----	-7.1	----	1		
1300 - 1310		4.7	----	-11.4	67	1	
1310 - 1320		6.8	----	----	----	1	
1320 - 1330	14,000	5.9	-3.7	11.7	237	2	
1330 - 1340		9.9	----	----	----	1	
1340 - 1350		----	----	----	----	0	
1350 - 1360		----	----	----	----	0	
1360 - 1370		2.2	-9.6	----	----	3	
1370 - 1380	13,500	----	----	----	----	0	
1380 - 1390		----	-3.4	----	----	1	
1390 - 1400		----	----	----	----	0	
1400 - 1410		5.9	-4.0	----	----	4	
1410 - 1450		----	----	----	----	0	
Airplane 333 - Traverse 1 Length of traverse 2607.1 sec							
0 - 100	9,500	----	----	----	----	0	
100 - 110		----	-4.1	----	----	2	
^a 110 - 120		3.5	----	5.1	66	1	
120 - 130		3.5	-5.4	----	----	4	
130 - 140		3.5	-3.8	----	----	2	
140 - 190	9,500	----	----	----	----	0	
190 - 200		5.1	----	----	----	2	
200 - 230		----	----	----	----	0	
^b 230 - 240		----	----	----	----	0	
240 - 250		----	----	----	----	0	
250 - 260	9,500	6.4	-5.7	----	-7.0	75	4
260 - 270		----	----	----	----	----	0
270 - 280		3.8	----	----	----	----	1
280 - 290		----	-3.2	----	----	----	1
290 - 300		3.8	-4.8	----	----	----	3
300 - 310	9,500	2.2	----	5.0	----	75	3
		----	----	----	----	----	
		----	----	----	----	----	
		----	----	----	----	----	
		----	----	----	----	----	

^aCloud entry.
^bCloud exit.

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
September 5, 1947 - Flight 34								
Airplane 333 - Traverse 1 Length of traverse 2607.1 sec								
310 - 320	9,500	6.4	-3.8	6.6	-----	71	---	3
320 - 330		6.4	-----	-----	-----	---	---	3
330 - 340		----	-6.7	----	-6.6	---	150	1
340 - 350		3.8	-3.2	-----	-----	---	---	2
350 - 360		4.8	-----	-----	-----	---	---	2
360 - 370	9,000	7.3	-5.1	-----	-----	---	---	4
370 - 380		5.4	-----	-----	-----	---	---	1
380 - 400		-----	-----	-----	-----	---	---	0
400 - 410		-----	-----	-----	-----	---	---	0
410 - 420	9,500	7.6	-----	-----	-----	---	---	1
420 - 430		4.1	-4.1	-----	-----	---	---	2
430 - 440		-----	-----	-----	-----	---	---	0
440 - 450		4.1	-5.4	-----	-----	---	---	2
450 - 460		----	-5.4	-----	-----	---	---	1
460 - 490		-----	-----	-----	-----	---	---	0
490 - 500		6.1	-7.3	7.0	-----	75	---	3
500 - 520		-----	-----	-----	-----	---	---	0
520 - 530		----	-4.5	----	-7.3	---	133	2
530 - 540		----	-4.5	-----	-----	---	---	1
540 - 550		-----	-----	-----	-----	---	---	0
550 - 560		8.2	-4.1	-----	-----	---	---	3
560 - 570		-----	-5.1	-----	-----	---	---	4
570 - 580		-----	-7.6	-----	-----	---	---	2
580 - 590		-----	-----	-----	-----	---	---	0
590 - 600		-----	-5.1	-----	-----	---	---	2
600 - 610		-----	-5.1	-----	-----	---	---	1
a-b 610 - 620		-----	-4.1	-----	-----	---	---	1
620 - 630		4.8	-----	-----	-----	---	---	2
630 - 640		6.7	-4.1	-----	-----	---	---	3
640 - 650		3.2	-4.1	-----	-----	---	---	2
650 - 660		-----	-3.8	-----	-----	---	---	1
a 660 - 670		-----	-----	-----	-----	---	---	0
670 - 680		-----	-----	-----	-----	---	---	0
680 - 690		-----	-5.7	-----	-----	---	---	1

^a Cloud entry.^b Cloud exit.

NACA

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)	Maximum true gust velocity $U_{t_{max}}$ (fps)	Gust gradient distance (ft)	No. of gusts
September 5, 1947 - Flight 34					
Airplane 333 - Traverse 1 Length of traverse 2607.1 sec					
690 - 700	9,500	3.5	-4.8	----	3
700 - 710		5.4	----	----	1
710 - 720		----	-3.8	----	1
720 - 730		----	----	----	0
730 - 740		3.8	----	----	2
740 - 750		2.9	----	6.4	1
750 - 760		4.4	-1.0	----	4
760 - 770		7.0	-4.8	----	4
770 - 780		----	-4.1	----	2
^b 780 - 790		----	-5.7	----	1
790 - 800		----	----	----	0
^a 800 - 810		----	----	----	0
810 - 850		----	----	----	0
^b 850 - 860		----	----	----	0
860 - 870		----	-6.0	----	3
870 - 880	9,000	7.6	-7.6	----	5
880 - 890		6.7	-4.4	----	5
890 - 900		7.3	-5.1	----	6
900 - 910		6.0	----	----	4
910 - 920		----	-4.1	----	1
920 - 930		----	----	----	0
930 - 940		6.0	-3.5	5.2	2
940 - 1120		----	----	----	0
1120 - 1130		5.4	----	----	1
1130 - 1140		5.7	----	----	3
1140 - 1270		----	----	----	0
1270 - 1280		----	-4.1	5.2	2
1280 - 1290		----	-3.2	4.0	1
1290 - 1340		----	----	----	0
^a 1340 - 1350	9,000	----	----	----	0
1350 - 1370		----	----	----	0
1370 - 1380		3.8	----	----	1
1380 - 1390		----	-3.8	----	1
1390 - 1400		----	----	----	0

^aCloud entry.
^bCloud exit.



TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)	Maximum true gust velocity $U_{t_{max}}$ (fps)	Gust gradient distance (ft)	No. of gusts
September 5, 1947 - Flight 34					
Airplane 333 - Traverse 1 Length of traverse 2607.1 sec					
1400 - 1410	9,000	----	-3.8	----	1
1410 - 1420		3.5	-3.8	----	4
1420 - 1430		4.4	----	----	1
1430 - 1440		3.8	----	----	1
1440 - 1450		6.3	----	11.1	2
1450 - 1460		2.8	-4.1	11.1	4
1460 - 1480		----	----	----	0
1480 - 1490		3.5	----	----	1
1490 - 1500		3.5	----	----	1
1500 - 1520		----	----	----	0
1520 - 1530	8,500	----	-3.8	----	1
1530 - 1550		----	----	----	0
1550 - 1560		3.5	----	----	1
1560 - 1570		----	-3.5	----	1
1570 - 1580		6.3	-5.0	----	4
1580 - 1590		4.1	----	----	1
1590 - 1600		----	-4.4	----	2
1600 - 1610		----	-7.3	----	2
1610 - 1620		3.5	-13.2	----	2
1620 - 1630		6.9	-6.3	----	9
1630 - 1640	8,000	3.4	-2.8	----	2
1640 - 1650		12.5	----	----	1
1650 - 1790		7,500	----	----	0
1790 - 1800		7,000	4.4	----	2
1800 - 1860		----	----	----	0
1860 - 1950		7,500	----	----	0
1950 - 1960		----	----	----	0
1960 - 2150		8,000	----	----	0
2150 - 2160		4.4	-4.7	5.5	3
2160 - 2170		3.4	----	----	1
2170 - 2190	8,000	----	----	----	0
2190 - 2200		4.4	----	----	1
2200 - 2210		----	----	----	0
2210 - 2220		----	-3.1	----	1
2220 - 2260		----	----	----	0

^bFlight exit.

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)	Maximum true gust velocity $U_{t_{max}}$ (fps)	Gust gradient distance (ft)	No. of gusts
September 5, 1947 - Flight 34					
Airplane 333 - Traverse 1 Length of traverse 2607.1 sec					
2260 - 2270	8,000	3.7	-----	-----	1
2270 - 2280		-----	-----	-----	0
2280 - 2290		5.0	-----	-----	2
2290 - 2300	7,500	7.8	-2.2	4.7 -1.4	2
2300 - 2310		9.7	-----	5.9	4
2310 - 2510		-----	-----	-----	0
2510 - 2520	6,000	9.1	-----	-----	1
2520 - 2530		5.6	-----	-----	1
2530 - 2540		5.6	-----	-----	1
2540 - 2550		3.4	-----	8.3	1
2550 - 2610		-----	-----	-----	0
September 5, 1947 - Flight 35					
Airplane 348 - Traverse 1 Length of traverse 617.0 sec					
0 - 10	15,000	1.9	-----	-----	1
10 - 20		5.1	-6.1	-----	2
^a 20 - 30		1.9	-5.1	-----	5
30 - 40		7.0	-6.1	-----	6
40 - 50		6.1	-12.8	-----	3
50 - 60		4.1	-7.3	-----	6
60 - 70		2.6	-----	-----	3
70 - 80		2.2	-7.0	-----	3
80 - 90		4.1	-8.3	-----	9
90 - 100		2.9	-8.0	-----	4
100 - 110		1.0	-6.1	-----	4
110 - 120		-----	-10.2	-----	1
120 - 130	14,500	3.2	-8.0	-----	6
130 - 140		6.1	-7.7	-----	3
140 - 150		7.3	-6.4	-----	7
150 - 160	15,000	3.2	-----	-----	3
160 - 170		3.2	-8.3	-----	2
170 - 180		1.9	-4.1	-----	3

^aCloud entry.

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts	
September 5, 1947 - Flight 35									
Airplane 348 - Traverse 1 Length of traverse 617.0 sec									
180 - 190	15,000	----	-----	----	-----	----	----	0	
190 - 200		16.9	-11.8	----	-----	----	----	3	
200 - 210		7.3	-13.4	----	-----	----	----	7	
210 - 220		9.6	-15.6	----	-----	----	----	5	
220 - 230		3.2	-7.0	----	-7.5	----	77	3	
230 - 240		3.2	-----	----	-----	----	----	1	
240 - 250		1.9	-----	----	-----	----	----	1	
250 - 260		5.1	-6.7	----	-----	----	----	5	
260 - 270		3.5	-7.7	----	-----	----	----	5	
270 - 280		2.9	-8.6	----	-----	----	----	3	
280 - 290		4.1	-7.0	----	-----	----	----	3	
290 - 300		7.3	-5.4	----	-----	----	----	2	
300 - 310		1.9	-5.1	----	-----	----	----	3	
310 - 320		-----	-8.3	----	-----	----	----	4	
320 - 330	14,500	3.2	-5.1	2.8	-----	121	----	2	
330 - 340	15,000	-----	-5.7	----	-----	----	----	1	
340 - 350	15,000	-----	-7.7	----	-----	----	----	3	
350 - 360		4.1	-5.7	5.6	-10.6	103	199	2	
360 - 370		-----	-----	----	-----	----	----	0	
370 - 380		4.5	-10.2	----	-----	----	----	5	
380 - 390		12.1	-8.6	----	-----	----	----	4	
390 - 400		1.9	-5.1	----	-----	----	----	5	
400 - 410		14,500	-----	-7.7	----	-----	----	----	1
410 - 420		-----	-----	----	-----	----	----	0	
420 - 430		1.9	-5.4	----	-----	----	----	3	
430 - 440		-----	-----	----	-----	----	----	0	
440 - 450	15,000	6.4	-5.1	----	-----	----	----	8	
450 - 460		3.8	-8.6	----	-----	----	----	6	
460 - 470		5.7	-7.0	----	-----	----	----	5	
470 - 480		-----	-7.0	----	-----	----	----	3	
480 - 490		-----	-5.1	----	-----	----	----	1	
490 - 500		12.1	-5.1	----	-----	----	----	5	
500 - 510		12.4	-15.6	----	-----	----	----	5	
510 - 520		8.6	-7.0	----	-----	----	----	6	
520 - 530		1.6	-12.4	----	-----	----	----	5	
530 - 540		-----	-----	----	-----	----	----	5	

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)	Maximum true gust velocity $U_{t_{max}}$ (fps)	Gust gradient distance (ft)	No. of gusts
September 5, 1947 - Flight 35					
Airplane 348 - Traverse 1 Length of traverse 617.0 sec					
540 - 550	15,000	11.8	-14.7	----	3
550 - 560		4.1	-----	----	1
560 - 570	15,500	----	-6.1	----	1
570 - 580		----	-----	----	0
^b 580 - 590		----	-2.2	----	1
590 - 600		----	-----	----	0
600 - 610		4.8	-----	----	1
610 - 620		----	-5.7	----	2
Airplane 348 - Traverse 2 Length of traverse 254.0 sec					
0 - 10	15,000	7.0	-10.1	----	9
^a 10 - 20		6.7	-8.2	----	7
20 - 30		2.9	-7.6	----	7
30 - 40		8.2	-10.1	----	5
40 - 50		7.0	-10.1	----	7
50 - 60		5.7	-8.9	----	7
60 - 70		7.9	-10.1	----	4
70 - 80		7.0	-14.9	----	4
80 - 90		16.2	-10.8	----	12
90 - 100	14,500	8.2	-15.5	----	9
100 - 110		6.7	-12.0	----	5
110 - 120	15,000	12.7	-10.1	----	4
120 - 130		----	-----	----	0
130 - 140		----	-5.7	----	1
140 - 150		8.6	-8.2	----	5
150 - 160		3.2	-7.9	----	7
160 - 170		6.0	-11.1	----	4
170 - 180		1.9	-5.1	----	2
180 - 190		4.1	-11.1	----	6
190 - 200		6.0	-12.7	----	7
200 - 210		10.8	-8.9	----	11
210 - 220		8.2	-14.9	----	13

^aCloud entry.^bCloud exit.

NACA

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e\max}$ (fps)		Maximum true gust velocity $U_{t\max}$ (fps)		Gust gradient distance (ft)		No. of gusts
September 5, 1947 - Flight 35								
Airplane 348 - Traverse 2 Length of traverse 254.0 sec								
220 - 230	15,000	5.7	-11.1	----	-----	---	---	5
^b 230 - 250		----	-----	----	-----	---	---	0
250 - 260		1.0	-5.4	----	-----	---	---	3
Airplane 348 - Traverse 3 Length of traverse 1358.6 sec								
0 - 10	15,000	1.6	-5.4	----	-----	---	---	5
10 - 20		2.5	-5.7	----	-----	---	---	5
^a 20 - 30		8.2	-1.3	----	-----	---	---	6
30 - 40	14,500	----	-12.3	----	-----	---	---	3
40 - 50		5.7	-13.2	----	-----	---	---	5
50 - 60		2.8	-7.6	----	-----	---	---	6
60 - 70		11.4	-5.4	----	-----	---	---	6
70 - 80		4.4	-10.1	----	-----	---	---	3
80 - 90		1.9	-6.3	----	-----	---	---	3
90 - 100	15,000	5.0	-----	----	-----	---	---	2
100 - 110	14,500	----	-7.6	----	-----	---	---	2
110 - 120	15,000	11.4	-7.3	----	-----	---	---	5
120 - 130		8.8	-14.5	----	-----	---	---	3
130 - 140		6.6	-23.0	----	-----	---	---	4
140 - 150	15,500	7.3	-8.8	----	-----	---	---	6
150 - 160		4.7	-8.8	----	-16.5	---	177	5
160 - 170		6.3	-9.1	----	-----	---	---	5
170 - 180		4.4	-7.3	----	-----	---	---	6
180 - 190	15,000	3.2	-----	----	-----	---	---	1
190 - 200		2.2	-11.4	----	3.1	---	57	5
200 - 210		----	-----	----	-----	---	---	0
210 - 230	15,500	----	-----	----	-----	---	---	0
230 - 240		2.3	-7.6	----	-15.8	---	92	5
240 - 250		6.0	-14.8	----	-----	---	---	6
250 - 260		2.2	-11.4	7.7	-----	110	---	3
260 - 270	15,000	4.7	-----	----	-----	---	---	5
270 - 280		6.0	-12.3	----	-----	---	---	5

^aCloud entry.^bCloud exit.

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
September 5, 1947 - Flight 35								
Airplane 348 - Traverse 3 Length of traverse 1358.6 sec								
280 - 290	15,000	2.5	-8.8	----	-----	---	---	5
290 - 300		6.0	-8.8	----	-----	---	---	8
300 - 310		3.5	-7.9	----	-----	---	---	4
310 - 320		8.2	-8.8	----	-----	---	---	3
320 - 330		5.0	-8.8	----	-----	---	---	8
330 - 340		3.2	-6.0	----	-----	---	---	9
340 - 350		----	-----	----	-----	---	---	0
350 - 360		6.9	-6.0	----	-----	---	---	8
360 - 370		4.7	-8.5	3.4	-----	104	---	6
370 - 380		1.9	-5.4	----	-----	---	---	3
380 - 390	15,500	1.9	-----	----	-----	---	---	2
390 - 400		----	-2.2	----	-----	---	---	2
400 - 410		5.4	-5.7	----	-----	---	---	3
410 - 420		----	-5.4	----	-----	---	---	1
420 - 430		15,000	----	-3.8	----	-----	---	1
430 - 440		2.2	-7.6	----	-----	---	---	3
440 - 460		14,500	----	-----	----	-----	---	0
460 - 470		15,000	----	-6.9	----	-----	---	2
470 - 480		14,500	4.1	-6.3	----	-----	---	2
^b 480 - 490		15,000	3.5	-2.5	5.7	-----	88	---
490 - 500	14,500	3.2	-5.0	----	-----	---	---	2
^a 500 - 510		----	-5.0	----	-----	---	---	3
510 - 520		6.9	-11.4	----	-----	---	---	7
520 - 530		6.6	-6.6	----	-----	---	---	5
530 - 540		14,500	2.8	-5.4	----	-----	---	2
540 - 550		15,000	2.5	-5.0	----	-----	---	5
550 - 560		----	-6.3	----	-----	---	---	4
560 - 570		14,500	3.5	-4.1	----	-----	---	6
570 - 580		2.8	-4.1	----	-----	---	---	3
580 - 590		15,000	6.0	-9.8	----	-----	---	3
590 - 600	15,000	9.8	-5.0	----	-----	---	---	6
600 - 610		2.8	-12.0	----	-----	---	---	8
610 - 620		8.2	-7.9	----	-----	---	---	10
620 - 630		12.6	-11.0	----	-----	---	---	5

^aCloud entry.
^bCloud exit.

NACA

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)	Maximum true gust velocity $U_{t_{max}}$ (fps)	Gust gradient distance (ft)	No. of gusts
September 5, 1947 - Flight 35					
Airplane 348 - Traverse 3 Length of traverse 1358.6 sec					
630 - 640	15,000	6.3	-11.7	----	8
640 - 650		4.1	-7.3	----	6
650 - 660	15,500	10.7	-12.3	----	5
660 - 670	15,000	9.1	-11.4	----	6
670 - 680		----	----	----	0
680 - 690	15,500	3.8	-7.9	----	8
690 - 700		4.4	-10.4	----	9
700 - 710	15,000	10.4	-5.0	----	5
710 - 720		10.7	-14.5	----	7
720 - 730		8.5	-6.3	----	6
730 - 740		----	-6.6	----	3
740 - 750		24.0	-6.6	----	2
750 - 760		2.2	-5.0	----	3
760 - 770		----	----	----	0
770 - 780		8.5	-14.2	----	4
780 - 790		9.8	-20.5	----	8
790 - 800		7.6	-10.7	----	6
800 - 810		9.8	-16.7	----	6
810 - 820		12.6	-17.3	----	6
820 - 830		8.2	-9.8	----	5
830 - 840		11.0	-10.7	----	6
840 - 850		3.5	-12.3	----	5
850 - 860		3.8	-8.2	----	4
860 - 870		4.1	-7.3	----	2
^b 870 - 880		11.7	----	9.2	183
880 - 890		12.9	-10.7	----	4
890 - 900	14,500	9.1	-10.4	----	4
900 - 910		14.5	-6.3	----	2
910 - 920	15,000	8.5	----	----	4
920 - 930		2.8	-5.0	----	2
930 - 940		6.3	-7.9	----	7
^a 940 - 950		----	-7.6	----	2
950 - 960		----	-5.0	----	2
960 - 970	14,500	1.8	-5.7	----	4

^aCloud entry.^bCloud exit.

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e\max}$ (fps)	Maximum true gust velocity $U_{t\max}$ (fps)	Gust gradient distance (ft)	No. of gusts
September 5, 1947 - Flight 35					
Airplane 348 - Traverse 3 Length of traverse 1358.6 sec					
^b 970 - 980	14,500	4.4	-6.3	----	2
980 - 990	15,000	4.7	-5.4	5.1	3
990 - 1000		----	-6.0	----	1
^a 1000 - 1010		6.3	-6.3	----	7
1010 - 1020	14,500	6.6	-14.5	----	7
1020 - 1030	15,000	6.0	-7.6	----	3
1030 - 1040		4.7	-11.4	----	5
1040 - 1050	14,500	4.7	-4.7	----	2
1050 - 1060		3.8	-7.9	----	4
1060 - 1070	15,000	3.5	-4.7	----	3
1070 - 1080	14,500	3.8	-6.3	3.5	6
1080 - 1090		4.4	----	----	1
1090 - 1100	15,000	----	-5.7	----	1
1100 - 1110		4.1	-11.0	----	5
1110 - 1120		----	----	----	0
1120 - 1130	14,500	7.3	-9.1	----	3
1130 - 1140	15,000	3.8	-10.7	----	3
1140 - 1150		4.4	-6.9	----	3
1150 - 1160		9.8	-13.6	----	5
1160 - 1170		4.4	-4.1	----	4
1170 - 1180	14,500	14.5	----	----	1
1180 - 1190		----	-4.7	----	1
1190 - 1200		----	-5.0	-5.5	120
1200 - 1210	15,000	4.1	-5.0	----	2
1210 - 1220		8.2	-6.6	----	5
1220 - 1230		1.9	-6.0	----	3
1230 - 1240		----	-11.0	----	2
1240 - 1250		----	----	----	0
1250 - 1260		9.8	-8.5	----	4
1260 - 1270		4.7	-11.7	----	3
1270 - 1280	14,500	----	----	----	0
1280 - 1290		----	-4.1	----	1
1290 - 1300		1.9	-5.7	----	4
1300 - 1310		9.8	-11.7	----	8

^aCloud entry.^bCloud exit.

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
September 5, 1947 - Flight 35								
Airplane 348 - Traverse 3 Length of traverse 1358.6 sec								
1310 - 1320	14,500	15.1	-10.4	----	-----	---	---	13
1320 - 1330	15,000	9.8	-5.4	----	-----	---	---	3
1330 - 1340		10.1	-----	----	-----	---	---	4
^b 1340 - 1350		----	-----	----	-----	---	---	0
1350 - 1360		10.1	-----	16.5	-----	308	---	1
Airplane 348 - Traverse 4 Length of traverse 375.0 sec								
0 - 10	15,000	2.9	-----	----	-----	---	---	3
^a 10 - 20		4.7	-8.5	----	-----	---	---	7
20 - 30		2.3	-9.4	----	-----	---	---	6
30 - 40		5.3	-2.9	----	-----	---	---	5
40 - 50		9.1	-15.8	----	-----	---	---	10
50 - 60	14,500	5.0	-14.3	----	-----	---	---	7
60 - 70		7.6	-4.7	----	-----	---	---	4
70 - 80	15,000	8.2	-10.8	----	-----	---	---	12
80 - 90		----	-9.1	----	-----	---	---	1
90 - 100	14,500	9.6	-9.4	----	-----	---	---	7
100 - 110		5.3	-5.8	----	-----	---	---	7
110 - 120	15,000	8.8	-11.4	----	-----	---	---	5
120 - 130		7.9	-12.6	----	-----	---	---	6
130 - 140		6.4	-9.6	----	-----	---	---	8
140 - 150		5.3	-9.6	----	-----	---	---	7
150 - 160		12.0	-17.0	----	-----	---	---	7
160 - 170		11.1	-7.0	----	-----	---	---	4
170 - 180		7.0	-8.8	----	-----	---	---	3
180 - 190	14,500	10.5	-6.1	----	-----	---	---	6
190 - 200	15,000	3.5	-7.0	----	-----	---	---	4
200 - 210		10.2	-21.3	23.3	-----	343	---	5
210 - 220		3.2	-7.3	9.5	-----	110	---	3
220 - 230		5.0	-4.4	----	-----	---	---	3
230 - 240		6.4	-7.3	----	-----	---	---	8
240 - 250		12.3	-9.1	----	-----	---	---	7

^aCloud entry.^bCloud exit.

NACA

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e\max}$ (fps)		Maximum true gust velocity $U_{t\max}$ (fps)		Gust gradient distance (ft)		No. of gusts
September 5, 1947 - Flight 35								
Airplane 348 - Traverse 4 Length of traverse 375.0 sec								
250 - 260	15,000	5.6	-10.5	----	-----	---	---	10
260 - 270	14,500	7.6	-11.4	----	-----	---	---	9
270 - 280		12.9	-7.9	----	-----	---	---	5
280 - 290	15,000	9.1	-16.7	----	-----	---	---	6
290 - 300	14,500	6.4	-12.6	----	-----	---	---	12
300 - 310		5.6	-9.1	----	-----	---	---	6
310 - 320		9.4	-10.8	----	-----	---	---	6
320 - 330	15,000	4.1	-16.7	----	-----	---	---	8
330 - 340		----	-7.0	----	-----	---	---	2
^b 340 - 350	14,500	2.3	-4.4	----	-----	---	---	3
350 - 360		4.4	-----	----	-----	---	---	1
360 - 370	15,000	2.0	-4.1	7.0	-----	45	---	5
370 - 380		3.2	-3.8	----	-----	---	---	2
Airplane 333 - Traverse 1 Length of traverse 459.8 sec								
0 - 80	10,000	----	-----	----	-----	---	---	0
80 - 90		----	-----	----	-5.6	---	107	1
90 - 100		----	-----	----	-----	---	---	0
100 - 110		7.5	-2.6	----	-----	---	---	4
110 - 120		----	-4.4	----	-----	---	---	3
120 - 130		6.7	-----	----	-----	---	---	1
130 - 140		----	-3.4	----	-----	---	---	3
140 - 150		----	-6.1	----	-----	---	---	1
150 - 160		7.9	-3.2	1.8	-----	173	---	4
160 - 170		----	-----	----	-----	---	---	0
^a 170 - 180		4.6	-----	----	-----	---	---	1
180 - 190		6.3	-5.0	----	-----	---	---	3
190 - 200		----	-3.3	----	-----	---	---	1
200 - 210		4.1	-2.0	----	-6.0	---	68	2
210 - 230	9,500	----	-----	----	-----	---	---	0
230 - 240		3.0	-3.2	2.1	-----	132	---	2

^aCloud entry.^bCloud exit.

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e\max}$ (fps)	Maximum true gust velocity $U_{t\max}$ (fps)	Gust gradient distance (ft)	No. of gusts			
September 5, 1947 - Flight 35								
Airplane 333 - Traverse 1 Length of traverse 459.8 sec								
240 - 250	9,500	3.7	-1.8	7.7	----	79	---	3
250 - 260		----	-3.5	----	-4.4	---	120	2
260 - 270		----	-3.4	----	----	---	---	1
270 - 280		5.6	-8.7	----	----	---	---	3
280 - 290		4.9	----	----	----	---	---	1
290 - 330		----	----	----	----	---	---	0
330 - 340		----	-2.5	----	----	---	---	1
340 - 350		----	----	----	----	---	---	0
^b 350 - 360		----	----	----	----	---	---	0
360 - 450		----	----	----	----	---	---	0
450 - 460		4.1	----	----	----	---	---	1
Airplane 333 - Traverse 2 Length of traverse 236.7 sec								
^a 0 - 10	9,500	----	----	----	----	---	---	0
10 - 20		----	----	----	----	---	---	0
20 - 30		31.7	-4.0	----	----	---	---	4
30 - 40		3.8	----	----	----	---	---	1
40 - 50		2.9	----	----	----	---	---	1
50 - 60	10,000	----	----	----	----	---	---	0
60 - 70		----	-3.2	----	----	---	---	1
70 - 80		----	----	----	----	---	---	0
80 - 90		5.3	-4.9	----	----	---	---	3
^b 90 - 100		----	-2.4	----	----	---	---	1
100 - 110	9,500	6.3	-5.6	----	----	---	---	4
110 - 120		3.8	-2.4	----	-5.2	---	104	4
120 - 130		----	-5.4	----	----	---	---	2
130 - 140		----	----	----	----	---	---	0
^a 140 - 150		----	-4.0	----	----	---	---	2
150 - 160		8.0	-4.0	----	-5.2	---	129	3
160 - 170		8.5	-7.1	----	----	---	---	5
170 - 180		4.5	-5.6	----	----	---	---	4
180 - 190		5.9	----	----	----	---	---	1

^aCloud entry.^bCloud exit.

NACA

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)	Maximum true gust velocity $U_{t_{max}}$ (fps)	Gust gradient distance (ft)	No. of gusts
September 5, 1947 - Flight 35					
Airplane 333 - Traverse 2 Length of traverse 236.7 sec					
190 - 210	9,500	----	-----	----	0
^b 210 - 220		3.6	-8.7	----	2
220 - 230		----	-----	----	0
230 - 240		----	-----	----	0
Airplane 333 - Traverse 3 Length of traverse 75.7 sec					
0 - 80	10,000	----	-----	----	0
Airplane 333 - Traverse 4 Length of traverse 405.2 sec					
^b 0 - 10	10,000	----	-----	----	0
^b 10 - 20		----	-----	----	0
20 - 180		----	-----	----	0
^a 180 - 190		----	-----	----	0
^b 190 - 200		----	-----	----	0
200 - 410		----	-----	----	0
Airplane 333 - Traverse 5 Length of traverse 367.5 sec					
0 - 150	10,000	----	-----	----	0
^a 150 - 160		----	-----	----	0
160 - 260		----	-----	----	0
260 - 270		3.6	-2.3	----	4
270 - 280		----	-2.3	----	3
280 - 290		----	-5.5	----	2
^b 290 - 310		----	-----	----	0
^b 310 - 320		----	-----	----	0
320 - 370		----	-----	----	0

^aCloud entry.^bCloud exit.

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Concluded

Time interval (sec)	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)	Maximum true gust velocity $U_{t_{max}}$ (fps)	Gust gradient distance (ft)	No. of gusts
September 5, 1947 - Flight 35					
Airplane 333 - Traverse 6 Length of traverse 175.0 sec					
0 - 30	10,000	----	-----	----	0
^b 30 - 40		----	-----	----	0
^a 40 - 50		----	-----	----	0
50 - 100		----	-----	----	0
100 - 110	9,500	----	-----	----	0
110 - 160	10,000	----	-----	----	0
^b 160 - 170		----	-----	----	0
170 - 180		----	-----	----	0

^aCloud entry.^bCloud exit.

NACA

TABLE II.- SUMMARY OF DRAFT-VELOCITY MEASUREMENTS FROM FLIGHTS
OF P-61C AIRPLANES WITHIN THUNDERSTORMS

Date	Flight no.	Air-plane no.	Assigned altitude (ft)	Traverse no.	Draft location from start of traverse (sec)		Draft extent (ft)	Average draft velocity (fps)
					Start	End		
9-4-47	33	356	20,000	a ₁				
				a ₂				
		348	15,000	a ₁				
				a ₂				
9-5-47	34	348	20,000	1	50.1	60.1	3,539	-12.0
				2	24.2	73.6	16,904	-13.2
					991.4	997.5	2,073	16.4
					1029.8	1052.4	8,134	-19.9
		353	15,000	1	83.3	91.0	2,512	-18.6
					116.4	119.7	1,107	-39.1
					199.0	208.0	3,080	-14.2
					325.0	329.5	1,447	25.3
					347.0	352.8	1,865	25.4
					362.0	390.0	7,529	19.6
				2	88.6	97.2	2,820	31.6
				3	45.0	57.8	3,871	-14.5
					351.0	363.0	3,780	-25.8
				4	178.8	191.0	3,851	-13.4
		333	10,000	1	249.3	258.0	2,310	12.9
					747.2	780.6	9,175	8.2
					1605.8	1628.2	6,797	-12.9
	35	348	15,000	1	197.5	209.0	3,579	25.0
					487.0	513.5	8,264	15.7
				2	86.5	98.8	3,828	-22.1

^aNo draft velocities indicated by records.



TABLE II.- SUMMARY OF DRAFT-VELOCITY MEASUREMENTS - Concluded

Date	Flight no.	Air-plane no.	Assigned altitude (ft)	Traverse no.	Draft location from start of traverse (sec)		Draft extent (ft)	Average draft velocity (fps)
					Start	End		
9-5-47	35	348	15,000	3	112.0	120.5	2,646	29.4
					127.0	145.5	5,981	23.9
					351.0	360.9	3,081	15.2
					600.0	639.5	13,085	13.5
					1118.0	1127.0	2,877	-11.9
		333	10,000	1	293.4	310.4	1,922	-8.9
				2	44.7	61.0	4,522	10.7
					89.6	112.0	6,007	-8.4
				a ₃				
				a ₄				
				a ₅				
				6	73.3	105.4	8,940	5.5

^aNo draft velocities indicated by records.



INDEX

<u>Subject</u>	<u>Number</u>
Gusts - Structure	6.1.2.1
Gusts - Frequency	6.1.2.2
Gusts - Turbulence	6.1.2.3

ABSTRACT

The gust and draft velocities from records of NACA instruments installed in P-61C airplanes participating in thunderstorm flights at Clinton County Army Air Field, Ohio, from September 4, 1947 to September 5, 1947 are presented.